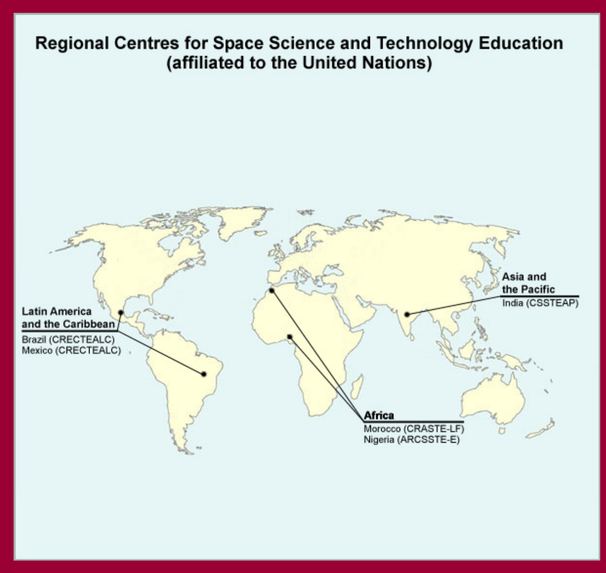
CAPACITY BUILDING
IN SPACE SCIENCE AND TECHNOLOGY
Regional Centres for Space Science and Technology Education, Affiliated to the United Nations

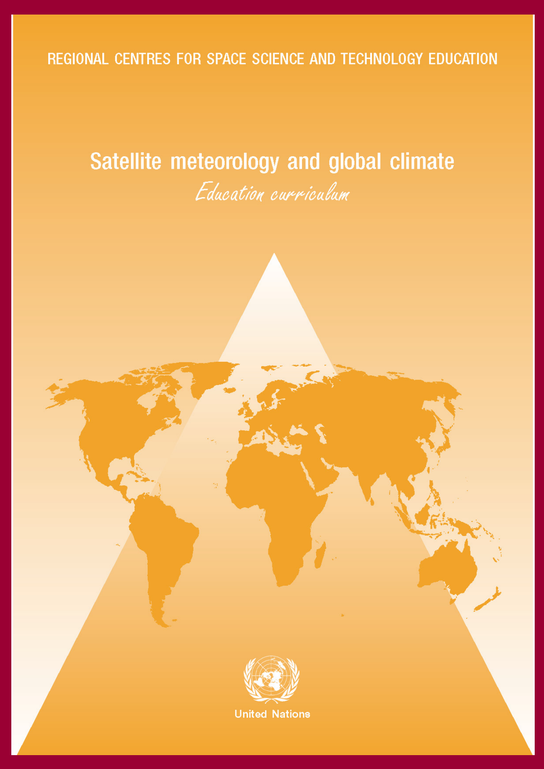
The United Nations General Assembly resolutions of 1990 and 1995, endorsed the recommendation of the Committee on the Peaceful Uses of Outer Space (COPOUS) that regional centres for space science and technology education should be established on the basis of affiliation to the United Nations, in developing countries.

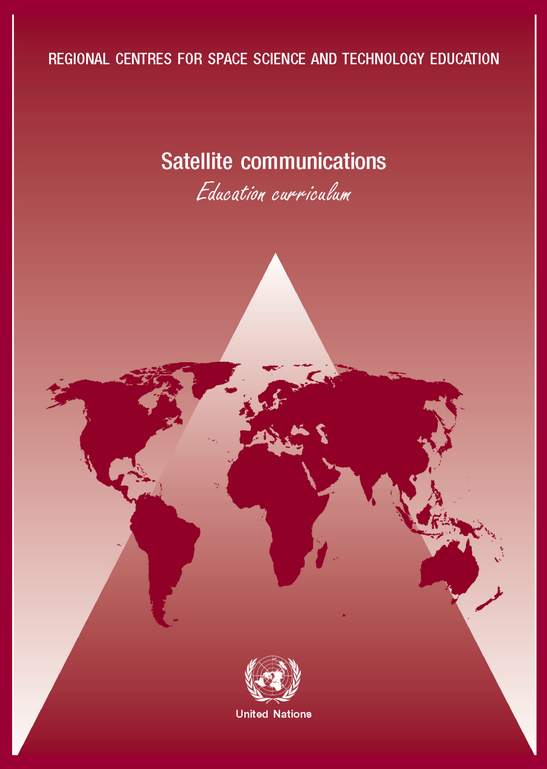


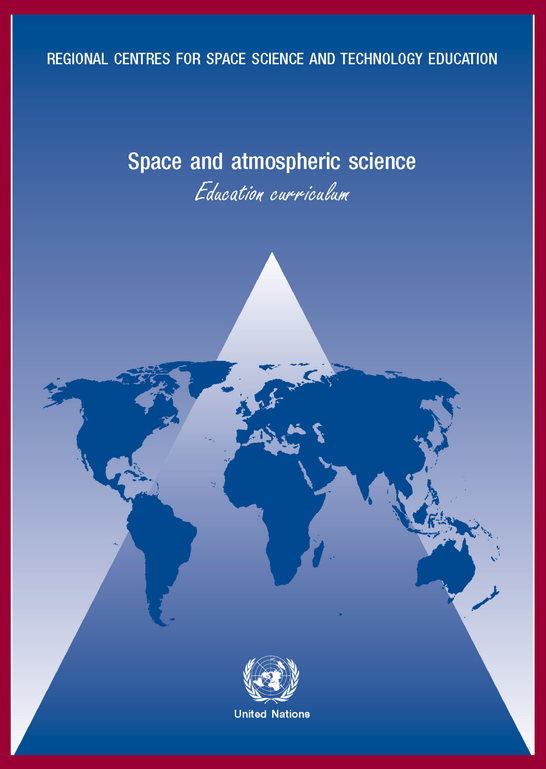
Under the auspices of the United Nations, through its Office for Outer Space Affairs (UN-OOSA), four regional Centres were established on the basis of regions that correspond to the United Nations Economic Commissions: Asia and Pacific (India), Latin America and the Caribbean (Brazil and Mexico) and Africa (Morocco, Nigeria). All of these Centres are officially affiliated to the United Nations through UN-OOSA. A fifth Centre in Western Asia (Jordan) will be established in the future. These Centres use existing facilities and expertise already installed in education and other research institutions in their respective regions.

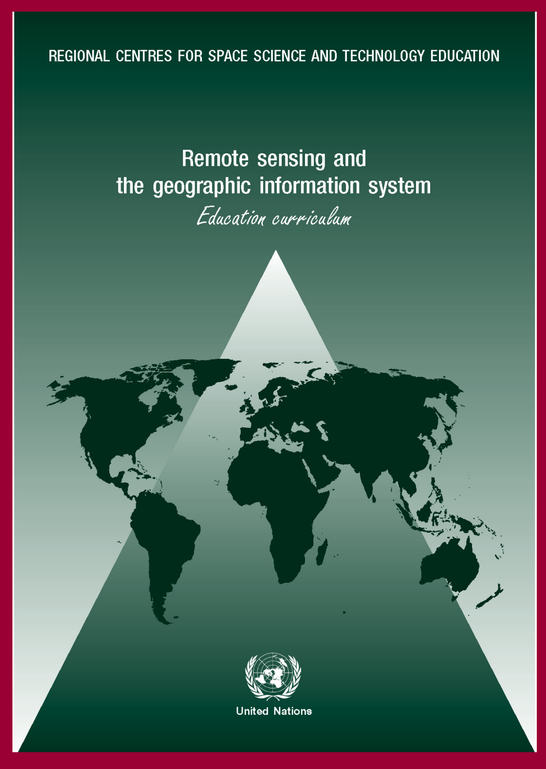
The overall policy-making body of each Centre is its Governing Board (GB) and consists of member States (within the region where the Centre is located), that have agreed, through their endorsement of the Centre's agreement, to the goals and objectives of the Centre.

The goal of the Centres is to develop, through in-depth education, an indigenous capability for research and applications in the core disciplines of Remote Sensing and Geographical Information Systems (RS&GIS), Satellite Communications (SATCOM), Satellite Meteorology and Global Climate (SATMET), Space and Atmospheric Sciences, as well as data management.









The United Nations Programme on Space Applications, with the support of prominent educators, has developed a set of standard curricula, which were adopted by the Centres for each topic of the core disciplines.

Teaching material, data, and software

- **Satellite meteorology and global climate**
  - Virtual Laboratory (http://oislab.eumetsat.org/cgi/VLab/start)
- **Space and atmospheric science**
  - Virtual Observatory (http://www.nvosdt.org)
  - Virtual Observatory (http://us-vo.org)
  - Virtual Observatory (http://www.eso.org/projects/avo/)
- **Remote Sensing and the Geographical Information Systems**
  - CEOS Portal (http://wgedu.ceos.org)
- **Satellite Communications**
  - Amateur Satellites as a Vehicle for Satellite Communication Education

For more detailed information on each Centre and the curricula of the core disciplines, please use the web site portal address:
http://www.oosa.unvienna.org/SAP/centres/centres.htm.

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CAPACITY BUILDING
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Centre for Space Science and Technology Education in Asia and the Pacific (CSSTEAP)

The Centre for Space Science and Technology Education in Asia and the Pacific (CSSTEAP), which was established in India in 1995, pioneered the United Nations initiative in creating educational Centres in developing countries. The Centre is headquartered in Dehradun, India, and its programmes are executed by staff of the Department of Space (DOS) at campuses in Dehradun and Ahmedabad. The Centre has access to the facilities, infrastructure and expertise of the Indian Institute of Remote Sensing (IIRS) in Dehradun, the Space Applications Centre and the Physical Research Laboratory (PRL), both at Ahmedabad. Its Governing Board comprises 14 members from 14 countries in the Asia and Pacific (AP) region and two observers. Since 1999, CSSTEAP has achieved the status of an institution of excellence and is celebrating the tenth anniversary of its establishment in 2005.

The Centre has conducted 21 nine-month postgraduate courses:

- 9 courses in RS & GIS
- 4 courses in SATCOM
- 4 courses in SATMET
- 4 courses in Space Science

Governing Board Meeting

Satellite Communications facilities

The Centre also has conducted 16 short-term courses/workshops and awareness programmes. These programmes have benefited 596 participants from 30 countries of the AP region (360 in long-term courses and 236 in short-term courses & workshops). In addition, 26 participants from 16 countries outside the AP region have been trained at CSSTEAP.

African Centre for Space Science and Technology – in French Language (CRASTE-LF)

The African Centre for Space Science and Technology – in French Language (CRASTE-LF) was established in Morocco in 1998. It is based at the Mohammadia School of Engineers at the University Mohammed V Agdal in Rabat. Important national institutions such as the Royal Centre of Space Remote Sensing (CRTS), Scientific Institute (IS), Agronomic Institute and Veterinary Hassan II (IAV), National Institute of Telecommunications (INPT) and Directorate of National Meteorology (DMN), actively support the educational programmes offered by the Centre. The Governing Board of CRASTE-LF is composed of 16 members from 13 countries in the region and one observer from UN-OOSA.

The Centre has conducted six 9-month postgraduate courses:

- 3 Courses In RS& GIS
- 2 Courses In SATCOM
- 1 Course In SATMET

The Centre has also conducted 10 workshops. These long-term programmes have benefited 80 participants from 16 countries in the region.

RS &GIS lecture

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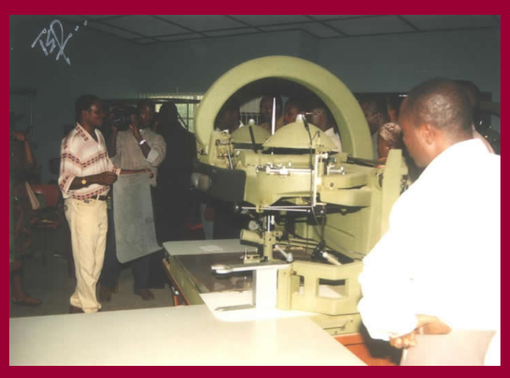
African Regional Centre for Space Science and Technology Education –English (ARCSSTE-E)

The African Regional Centre for Space Science and Technology Education – English (ARCSSTE-E) was inaugurated in Nigeria in 1998. It operates under the auspices of the National Space Research and Development Agency (NASRDA) and is located at Obafemi Awolowo University (OAU) campus, Ile-Ife. The Centre's facilities are mainly provided by departments from OAU and the Regional Centre for Training in Aerospace Surveys (RECTAS), which is also located at the OAU campus.

ARCSSTE-E has conducted six 9-month postgraduate courses:

- 2 courses in RS & GIS
- 2 courses in SATCOM
- 2 courses in SATMET

The Centre also has conducted 8 short-term courses/ workshops and seminars.
These postgraduate courses have benefited 30 participants from nine countries in the region.



Practical session - RS & GIS workshop

The opening of the 1st regional workshop on RS & GIS

Regional Centre for Space Science and Technology Education for Latin America and the Caribbean - (CRECTEALC) Brazil and Mexico campuses

The Regional Centre for Space Science and Technology Education for Latin America and the Caribbean - Brazil and Mexico campuses (CRECTEALC) was established in 1997 after Brazil and Mexico signed an agreement recognizing the Centre with a campus located in each country. The campus in Brazil benefits from the facilities made available to it by the National Institute for Space Research (INPE), a renowned Brazilian research institution in space science and technology. Similar high quality facilities are found at the campus in Mexico, which is supported by the National Institute of Astronomy, Optics and Electronics. The Governing Board of CRECTEALC is chaired alternatively by Mexico and Brazil. The Brazil Campus has already conducted two postgraduate courses and four short-term programmes in RS & GIS. These postgraduate courses have benefited 25 scholars from 10 countries in the region. The Mexican campus is planning to offer its first postgraduate programme in 2005.

RS & GIS facilities

Participants of the nine-month postgraduate course RS&GIS